

**Practice**

For use with pages 458–461

**Simplify the expression.**

1.  $\sqrt{54}$

2.  $\sqrt{112}$

3.  $\sqrt{176}$

4.  $\sqrt{180}$

5.  $\sqrt{117f}$

6.  $\sqrt{432y^2}$

7.  $\sqrt{\frac{120}{121}}$

8.  $\sqrt{\frac{75}{225}}$

9.  $\sqrt{\frac{202}{256}}$

10.  $\sqrt{\frac{320}{441}}$

11.  $\sqrt{\frac{21v^2}{324}}$

12.  $\sqrt{\frac{94t}{196}}$

13. A square has an area of 700 square units. Find the length of a side of the square as a radical expression in simplest form.

**Simplify the expression.**

14.  $\sqrt{171cd^2}$

15.  $\sqrt{152m^2n}$

16.  $\sqrt{126x^2y^2}$

17.  $\sqrt{\frac{23w^2}{49}}$

18.  $\sqrt{\frac{45rt^2}{144}}$

19.  $\sqrt{\frac{76p^2q^2}{81}}$

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- 20.** After a car accident on a dry asphalt road, an investigator measures the length  $\ell$  (in feet) of a car's skid marks. The expression  $\sqrt{18\ell}$  gives the car's speed in miles per hour at the time the brakes were applied.
- Write the expression in simplest form.
  - The skid marks are 140 feet long. Use the simplified expression to approximate the car's speed when the brakes were applied.
- 21.** You drop a stick from the top of a building that is 245 feet high. You can use the expression  $\sqrt{\frac{245}{16}}$  to find the time in seconds that it takes the stick to hit the ground. Write the expression in simplest form. Then approximate the value of the expression to the nearest second.